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(54) Title: GLUCANASES, NUCLEIC ACIDS ENCODING THEM AND METHODS FOR MAKING AND USING THEM

(57) Abstract: The invention relates to polypeptides having glucanase, e.g., endoglucanase, mannanase, xylanase activity or a combination of these activities, and polynucleotides encoding them. In one aspect, the glucanase activity is an endoglucanase activity (e.g., endo-1,4-beta-D-glucan 4-glucano hydrolase activity) and comprises hydrolysis of 1,4-beta-D-glycosidic linkages in cellulose, cellulose derivatives (e.g., carboxy methyl cellulose and hydroxy ethyl cellulose) lichenin, beta-1,4 bonds in mixed beta-1,3 glucans, such as cereal beta-D-glucans or xyloglucans and other plant material containing cellulosic parts. In addition, methods of designing glucanases, xylanases have increased activity and stability at increased pH and temperature.